(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 28 October 2004 (28.10.2004)

PCT

(10) International Publication Number WO 2004/092244 A3

(51) International Patent Classification⁷:

C08G 59/68

(21) International Application Number:

PCT/EP2004/050503

(22) International Filing Date: 13 April 2004 (13.04.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0697/03

16 April 2003 (16.04.2003) CH

(71) Applicant (for all designated States except US): HUNTS-MAN ADVANCED MATERIALS (SWITZERLAND) GMBH [CH/CH]; Klybeckstrasse 200, CH-4057 Basel (CH).

(72) Inventor; and

(75) Inventor/Applicant (for US only): WEIDMANN, Ulrich [DE/CH]; Habsburgerstrasse 38, CH-4055 Basel (CH).

(74) Agent: MAUÉ, Paul Georg; Solvias AG, Patents, WKL-402.3.04, Klybeckstrasse 191, CH-4002 Basel (CH).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

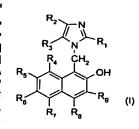
with international search report

 before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 23 December 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ACCELERATOR SYSTEMS FOR LOW-TEMPERATURE CURING OF EPOXY RESIN COMPOSITIONS



(57) Abstract: Composition comprising as component A) a 1-imidazoly[mothyl-substituted 2-naphthol compound of the general formula (I) where R_1 , R_2 and R_3 each independently of one another are H; C_{1-17} alkyl; C_{3-12} cycloalkyl, optionally substituted by C_{1-4} alkyl groups; C_{4-10} aryl, optionally substituted by 1-3 C_{1-4} alkyl groups; C_{5-10} , phonylalkyl, optionally substituted by 1-3 C_{1-4} alkyl groups; C_{3-12} alkynyl; or aromatic or aliphatic C_{3-12} acyf; R_4 , R_5 , R_6 , R_7 , R_8 , and R_9 each independently of one another are H; C_{1-12} alkyl; C_{3-12} cycloalkyl, optionally substituted by C_{1-4} alkyl groups; C_{4-20} cycloalkyl-alkyl, optionally substituted by C_{1-4} alkyl groups; C_{4-20} cycloalkyl-alkyl, optionally substituted by C_{1-4} alkyl groups; C_{6-10} aryl, optionally substituted by C_{1-4} alkyl groups; C_{7-15} phenylalkyl, optionally substituted by C_{7-15} alkonyl; C_{7-12} alkoxy; or C_{7-15} phenylalkyl, optionally substituted by C_{7-15} alkonyl; C_{7-15} alkony

component B) a phenol which is liquid at room temperature, the weight ratio of component A) to component B) being from 10:90 to 80:20. as accelerator for curable epoxy resin compositions which are used as a compression moulding compound, sinter powder, encapsulating system, casting resin, or for producing prepregs and laminates having very good interlaminar shear strength values using impregnating methods or injection methods, for producing components, especially components of large surface area.

INTERNATIONAL SEARCH REPORT

Interponal Application No PCT/EP2004/050503

| | | _ | PCT/EP2004/050503 |
|-----------------------|--|-----------------------------------|---|
| IPC 7 | SIFICATION OF SUBJECT MATTER C08G59/68 | | |
| | | | |
| According | to International Patent Classification (IPC) or to both national class | sification and IPC | |
| B. FIELDS | SEARCHED | | |
| IPC 7 | documentation searched (classification system followed by classification s | cation symbols) | |
| | | | |
| Documenta | ation searched other than minimum documentation to the extent th | at such documents are include | d in the fields accepted |
| ļ | | a soor documents are include | u in the tieros searched |
| Electronic | data base consulted during the international search (name of data | base and where practical se | arch forms used) |
| | nternal, PAJ, CHEM ABS Data, WPI Da | | ardi terns useu) |
| | , 2 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | | |
| | • | • | |
| C. DOCUM | ENTS CONSIDERED TO BE RELEVANT | | |
| Category * | Citation of document, with indication, where appropriate, of the | relevant passages | Relevant to claim No. |
| | | | |
| Α | EP 0 761 709 A (CIBA GEIGY AG) 12 March 1997 (1997-03-12) | | 1-12 |
| | cited in the application | | Ì |
| | claim 1; examples 1-7 | | |
| Α | PATENT ABSTRACTS OF JAPAN | | 1 10 |
| | vol. 0122, no. 83 (C-518). | | 1-12 |
| | 3 August 1988 (1988-08-03) & JP 63 061016 A (NEW JAPAN CHE | W 00 170) | |
| | 17 March 1988 (1988-03-17) | W CO LID), | |
| | abstract | | |
| Α | EP 0 086 102 A (CELANESE CORP) | | 1 12 |
| | 17 August 1983 (1983-08-17) | | 1-12 |
| | claims 1,2 | | ļ |
| | | -/ | |
| | | | |
| ľ | | | |
| X Furth | ner documents are listed in the continuation of box C. | | |
| _ | | X Palent family mem | bers are listed in annex. |
| | tegories of cited documents : | *T* later document publishe | d after the international filing date |
| wiisid | ant defining the general state of the art which is not ered to be of particular relevance | cited to understand the invention | in conflict with the application but principle or theory underlying the |
| ming G | | "X" document of particular r | elevance; the claimed invention novel or cannot be considered to |
| AALINCII I | nt which may throw doubts on priority claim(s) or is cited to establish the publication date of another n or other special reason (as specified) | "Y" document of particular r | ep when the document is taken alone |
| *O* docume other n | ent referring to an oral disclosure, use, exhibition or | document is combined | o involve an inventive step when the |
| *P* docume | int published prior to the international filing date but an the priority date claimed | in the art. | on being obvious to a person skilled |
| | actual completion of the international search | *&* document member of the | e same patent family ternational search report |
| | | | · |
| | 5 October 2004 | 03/11/2004 | ı |
| Name and m | nailing address of the ISA European Patent Office, P.B. 5818 Patentiaan 2 | Authorized officer | |
| | Tel. (+31-70) 340-2040. Tx. 31 651 epo ni | | _ |
| _ BOTAGE | Fax: (+31-70) 340-3016 | O'Sullivar | l , [|
| m M . I /ISA/2* | 10 (second shoot) (Innue - con s) | | |

INTERNATIONAL SEARCH REPORT

International Application No PCT/EP2004/050503

| C.(Continu | ation) DOCUMENTS CONSIDERED TO BE RELEVANT | PCT/EP20 | 04/050503 |
|------------|---|----------|-----------------------|
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | | In the second |
| | appropriate, or the relevant passages | | Relevant to claim No. |
| A | US 2002/058756 A1 (KONARSKI MARK M) 16 May 2002 (2002-05-16) sentence 25, paragraph 63 | | 1-12 |
| A | YOSHITOMI PHARMACEUTICAL INDUSTRIES ET AL: "1-(1,2-Dihydronaphthalen-3-ylmethyl or 2-indenylmethyl)imidazoles" CAPLUS, 1981, XP002163356 AN- 1981-587256 abstract | | 1-12 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | ļ | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | | 1 | |

INTERNATIONAL SEARCH REPORT

Information on patent family members

PC17EP2004/050503

| Detect description | | | | | | 2004/050503 |
|---|----|------------------|----|----------------------------|--------|------------------|
| Patent document cited in search report | | Publication date | | Patent family member(s) | | Publication date |
| EP 0761709 | Α | 12-03-1997 | US | 5591811 | A | 07-01-1997 |
| | | | BR | 9603729 | | 26-05-1998 |
| | | | ĈÁ | 2185207 | | 13-03-1997 |
| | | | DE | 69608054 | D1 | 08-06-2000 |
| | | | DE | 69608054 | T2 | 11-01-2001 |
| | | | EΡ | 0761709 | A2 | 12-03-1997 |
| | | | ES | 2146378 | T3 | 01-08-2000 |
| | | | JP | 9118741 | | 06-05-1997 |
| | | | TW | 487721 | В | 21-05-2002 |
| JP 63061016 | Α | 17-03-1988 | JP | 1812687 | | 27-12-1993 |
| | | | JP | 5021926 | | 26-03-1993 |
| EP 0086102 | Α | 17-08-1983 | CA | 1206687 | Δ1 | 24-06-1986 |
| | | | DE | 3363857 | | 10-07-1986 |
| | | | EP | 0086102 | | 17-08-1983 |
| | | | JР | 1611109 | | 15-07-1991 |
| | | | JP | 2036129 | В | 15-08-1990 |
| | | | JP | 58147418 | Α | 02-09-1983 |
| | | | US | 4417010 | Α | 22-11-1983 |
| US 2002058756 | A1 | 16-05-2002 | US | 6670430 | B1 | 30-12-2003 |
| | | | US | | A1 | 09-10-2003 |